

REMARKS

Reconsideration of the present application is respectfully requested in view of the following remarks. Prior to entry of this response, claims 1-25 were pending in the application, of which claims 1, 10, 13, 17, 20, and 23-25 are independent. In the Office Action dated March 23, 2005, the Examiner rejected claims 1-25 under 35 U.S.C. § 102(b). Following this response, claim 1 is amended and new claims 26-29 are presented of which claim 28 is independent. Applicants hereby address the Examiner's rejections of the claims in turn.

Independent Claim 1 and Dependent Claims 2-9

In the Office Action of March 23, 2005, the Examiner rejected claim 1 under 35 U.S.C. § 102(b) in view of U.S. Patent No. 6,606,539 (Raab et al.). In response, Applicants have amended claim 1 and hereby submit that amended claim 1 is novel and patentable over Raab et al. Particularly, Applicants submit that amended claim 1 additionally recites the novel feature of a warning indicator that warns a user in response to (a) a determination of an angle between the first and second links, (b) a determination of a distance from a supporting point of the measuring arm to a head point of the measuring arm, and (c) a detection of at least one of two conditions, where the first condition being that the determined angle of (a) exceeds a first value and the second condition being that the determined distance of (b) exceeds a second value. It follows that in accordance with amended claim 1, both determinations (a) and (b) are made regardless of which error condition is detected in (c). As support for the

amendments to claim 1 may be found on page 9, lines 1-5 and page 10, lines 4-7, no new matter has been added.

Raab et al., on the other hand, completely fails to show or suggest the above claimed feature of providing a warning to the user in response to performing the claimed combination of (a), (b), and (c). Instead, Raab et al., in its relevant portions, merely refers to a system that includes “an error condition light 166, and six lights 20, one for each of the six transducers” (Col. 8, lines 42 and 43). In the event that “any of the transducers approach its rotational endstop 106 from within 2 degrees, a light and an audible beep for that particular transducer indicates to the user that the user is too close to the end stop” (Col. 8, lines 55-58). Additional communication and calculation errors may be communicated to the user by a flashing of the error light and then a combination of lights of the six transducers (Col. 9, lines 1-5). However, there is no explanation or description of what these error conditions may be. Most importantly, nowhere in Raab et al. is it shown or suggested that an angle according to (a) and a distance according to (b) are both determined in order to detect one of two error conditions as specified in (c).

Accordingly, at least because Raab et al. completely fails to show or suggest each and every claimed element of amended claim 1, amended claim 1 is novel and patentable over Raab et al. under 35 U.S.C. § 102(b). Claims 2-9 depend from amended claim 1 and are, therefore, novel and patentable over Raab et al. at least because amended claim 1 is novel and patentable over Raab et al.

Independent Claim 10 and Dependent Claims 11 and 12

In the Office Action of March 23, 2004, the Examiner rejected claim 10 under 35 U.S.C. § 102(b) in view of Raab et al. The Examiner asserted that Raab et al. discloses each and every element of the present invention as recited in claim 10. The Examiner's rejection is respectfully traversed.

Applicants submit that Raab et al. at least fails to show or suggest the claimed feature of a warning indicator that warns a user in response to a detection of a condition that the shoulder joint provides the second link with a bending motion beyond a range determined based on the force generated by the counter balance. Moreover, Applicants submit that the above claimed feature specifically enables the warning indicator to alert a user as to measurement errors detected in association with forces generated by the counter balance, which are not detected by the system of Raab et al.

As described above, the system of Raab et al. merely gives a warning to the user when one or more of the transducers approach its rotational endstop. This type of warning does not take into account measurement errors resulting from, for example, "difference in the force of the balancer." Page 7, line 12. The recited warning feature of claim 10 is thus distinguishable from the warning mechanism of Raab et al. at least in that it warns the user of this type of error through detection of whether the shoulder joint is providing the second link with a bending motion that is beyond a range determined based on the force generated by the counter balance.

Accordingly, at least because Raab et al. fails to show or suggest each and every element of claim 10, claim 10 is novel and patentable over Raab et al. under 35 U.S.C.

§ 102(b). Claims 11 and 12 depend from claim 10 and are, therefore, also novel and patentable over Raab et al. at least for the same reasons.

Independent Claim 13 and Dependent Claims 14-16

In the Office Action of March 23, 2004, the Examiner rejected claim 13 under 35 U.S.C. § 102(b) in view of Raab et al. The Examiner's rejection is respectfully traversed. Applicants submit that Raab et al. fails to show or suggest each and every element of claim 13 at least because it fails to show or suggest detecting a parameter concerning a posture of the measuring arm exceeding a prescribed value, the prescribed value having been determined in accordance with a first probability that a measurement error due to a user action pulling the measuring arm away from the support member becomes out of an allowable range; and subsequently warning the user in accordance with result of the detecting.

As discussed above, Raab et al, in its relevant portions, describes giving a warning to the user when one or more of the transducers approach its rotational endstop. The present invention recited in claim 13 differs from the system of Raab et al. by recognizing that measurement errors may be introduced by a much broader range of error factors. In order to more accurately determine whether a posture of the measuring arm is likely to cause a significant error that a user should be alerted to, the system of the claim 13 compares a parameter concerning the posture of the measuring arm to a prescribed value that is determined based on a probability of a measurement error due to a user action pulling the measuring arm away from the support member become out of an allowable range. In this way, the system of claim 13 is capable of producing a

warning whenever the parameter concerning the posture of the measuring arm exceeds the determined prescribed value regardless of whether any endstop limits are approached.

Accordingly, Applicants submit that at least because Raab et al. fails to show or suggest each and every element of claim 13, claim 13 is novel and patentable over Raab et al. under 35 U.S.C. § 102(b). Claims 14-16 depend from claim 13 and are, therefore, also novel and patentable over Raab et al. for at least the same reasons.

Independent Claim 17 and Dependent Claims 18 and 19

In the Office Action of March 23, 2004, the Examiner rejected claim 17 under 35 U.S.C. § 102(b) in view of Raab et al. The Examiner's rejection is respectfully traversed. Applicants submit that Raab fails to show or suggest each and every element of claim 17 at least because it fails to show or suggest detecting a parameter concerning a posture of the measuring arm exceeding a prescribed value, the prescribed value having been determined in accordance with a first probability that a measurement error due to a user action moving the measuring arm by the counter balance becomes out of an allowable range; and warning a user in accordance with a result of the detecting.

The Examiner asserts in the Office Action that the above mentioned claim feature is described in Col. 9, lines 1-9 of Raab et al. Contrary to the Examiner's assertion, Raab et al., in the cited portion, merely mentions that communication and calculation errors may be communicated to the user by a flashing of the error light. There is no disclosure relating to a probability and, fundamentally, it is not at all clear what these

errors may be. More specifically, nowhere in this portion or any other relevant portions of Raab et al. is it shown or suggested that a prescribed value in accordance with a probability that a measurement error due to a user action moving the measuring arm by the counter balance becomes out of an allowance range is determined, which is then used to detect whether a parameter concerning a posture of the measuring arm is out of range.

Accordingly, Applicants submit that at least because Raab et al. fails to show or suggest each and every element of claim 17, claim 17 is novel and patentable over Raab et al. under 35 U.S.C. § 102(b). Claims 18 and 19 depend from claim 17 and are, therefore, also novel and patentable over Raab et al. for at least the same reasons.

Independent Claims 20 and Dependent Claims 21 and 22

In the Office Action of March 23, 2004, the Examiner rejected claim 20 under 35 U.S.C. § 102(b) in view of Raab et al. The Examiner's rejection is respectfully traversed. Applicants submit that Raab fails to show or suggest each and every element of claim 20 at least because it fails to show or suggest a processor configured to input an angle of each joint of the measuring arm into a formula to produce a three-dimension coordinate corresponding to a position of the probe, the formula including a term for correcting an error due to a change of the force generated by the counter balance.

In the Office Action, The Examiner asserts that the serial box 16 and host computer 18 of Raab et al. perform the calculations carried out by the claimed processor described above (Office Action, page 8). Contrary to the Examiner's

assertion, the serial box of Raab et al. merely receives and processes basic transducer data and responds to the host computer with the desired three-dimensional positional or orientation information (Col. 5, lines 40-45). Specifically, calculations of Raab et al. are performed based on overall characteristics of the measuring arm and subsequent transducer readings to generate the X, Y, and Z values in an absolute coordinate system (Col. 11, lines 51-55). Nowhere in Raab et al. is it shown or suggested that a term for correcting an error due to a change of the force generated by the counter balance is introduced into the coordinate calculations.

Accordingly, Applicants submit that at least because Raab et al. fails to show or suggest each and every element of claim 20, claim 20 is novel and patentable over Raab et al. under 35 U.S.C. § 102(b). Claims 21 and 22 depend from claim 20 and are, therefore, also novel and patentable over Raab at least for the same reasons.

Independent Claims 23-25

In the Office Action of March 23, 2004, the Examiner rejected claims 23-25 under 35 U.S.C. § 102(b) in view of Raab et al. Applicants submit that claims 23-25 include novel elements that correspond to novel claim elements discussed above in connection with claims 20, 13, and 17, respectively. Accordingly, Applicants submit that claims 23-25 are novel and patentable over Raab et al. under 35 U.S.C. § 102(b) at least for the same reasons that claims 20, 13, and 17 are novel and patentable over Raab et al.

New Claims 26-29

New claims 26-29 have been added. Support for claims 26-28 may be found on page 8, line 11 to page 10, line 3. Support for claim 29 may be found on page 11, line 22 to page 12, line 19. Thus, no new subject matter has been added.

Claims 26 and 27 depend from claim 13 and are, therefore, novel and patentable over Raab et al. under 35 U.S.C. § 102(b) at least for the same reasons that claim 13 is novel and patentable over Raab et al.

Claim 29 depend from claim 17 and is, therefore, novel and patentable over Raab et al. under 35 U.S.C. § 102(b) at least for the same reasons that claim 17 is novel and patentable over Raab et al.

Claim 28 specifies novel features that correspond to the novel features of amended claim 1 discussed above. Specifically, claim 28 recites a warning indicator that warns a user in response to a detection of a condition that a parameter concerning a distance of the measuring arm's reach exceeds a prescribed value. Applicants submit that at least because Raab et al. completely fails to show or suggest at least this feature of claim 28 as discussed above in connection with amended claim 1, claim 28 is novel and patentable over Raab et al. under 35 U.S.C. § 102(b).

In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge
any additional required fees to our Deposit Account 06-0916.

Respectfully submitted,

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